

SEASONAL AMPLITUDES

	TEMPERATURE				PRECIPITATION	
	London 1881-1920	St. Louis 1836-1875	Leningrad 1871-1910	Tokio 1881-1920	Calcutta 1881-1920	Tokio 1881-1920
2-year average ...	26.8° F.	49.0° F.	32.8° C.	24.8° C.	1,517 mm.	2,005 mm.
5 " " ...	23.7	48.3	28.6	22.6	1,509	1,610
10 " " ...	23.6	46.0	25.9	22.8	1,346	1,636
20 " " ...	24.8	46.3	25.5	22.9	1,236	1,482
40 " " ...	23.1	47.9	25.2	22.3	1,251	1,677

In every case the 2-year average shows the greatest amplitude. The smallest amplitude is reached with a 10-year period in one case, a 20-year period in two, and a 40-year period in three. The seasonal distribution of births depends upon far more variables than does that of temperature or precipitation. It is influenced not only by the weather, but by epidemics and the course of business. In any given year it may depart far from the normal because of wars, migration, and many other factors. Moreover, it varies notably from place to place according to the strength of these various factors. Hence as the body of data increases, and as it covers a larger number of years and of places, the amplitude diminishes.

5. According to Mr. Sandon I say on page 294 that "the older of two children is *better treated*," as he puts it.

What I actually say is that the greater leadership of the older as compared with the younger child in two-child families "cannot be a matter of inheritance. It must be either because the older of the two children is *better trained* and has greater opportunities, or because the second child is *physically weaker* than the first." I go on to give reasons for thinking that the *second* alternative, physical weakness, which Mr. Sandon does not mention, is the actual condition.

6. "The British figure does not really fall in line in any case with the author's thesis . . . of births in general."

Omitting Scotland, where Mr. Sandon admits that the figures agree with the thesis, *Season of Birth* contains seventeen curves representing England, or Britain as a whole. Among these no less than eleven agree with the thesis. The most important of these represents all England from 1841 to 1880. Unfortunately, the data are published only by quarters, but the first quarter of the year has the highest birth-rate, the second quarter is slightly lower, and the other two quarters decidedly lower. The six curves that do not agree with the general thesis represent special groups, such as the landed gentry, which systematically depart from the normal. They are based on relatively small

numbers of people, in some cases only a few hundred. Thus the British data, taken by themselves, would lead to the same general conclusion as do the data for all countries.

7. At the close of his review Mr. Sandon sets forth a conclusion which the reader takes to be different from mine. He says: "It seems likely that, in this country at least, sex, health and intelligence of an individual will be decided by many other factors than that of the temperature shortly before conception."

What I say about the matter on page 437 is as follows: "Heredity, diet, and mode of life, when taken together, doubtless have far more effect upon health, longevity, and achievement than has season of birth." Then on page 441 I make the modest suggestion that if all the children of the United States were conceived at the season when their parents had the best health, the average span of life might be increased by two years.

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To the Editor, Eugenics Review

SIR,—I am obliged by your courtesy in letting me see Mr. Ellsworth Huntington's letter. I am sorry he thinks that I have made a surprising number of misstatements, and should be grateful for the opportunity to reply very briefly, and therefore I am afraid very inadequately, to his points.

1. I regret that my statement leads to misapprehension.

2. A clerical error in reading my MS. gave "max." for "mean" here: I am to blame.

3. I agree. But it is necessary for a critical examination to know on what size of population the figures are based, and very often there is no indication.

4. The climate figures given illustrate my point, which is that the greater the number of observations the more the accidental fluctuations smooth

out, to leave only the non-fortuitous fluctuations determining the shape of the curve of variations.

5. Another unfortunate error in reading my MS. I wrote "trained" not "treated." I cannot agree that the evidence submitted—summarized in the series (p. 295) 2·1, 1·2, 1·6, 1·4, 1·3, 1·6—demonstrates the conclusions suggested.

6. Unfortunately for Mr. Ellsworth Hunting-

ton's thesis, for 1938 (the latest figures by me) in England and Wales the July-September quarter had more births registered than the January-March one, whilst in Scotland it was less: in both England and Wales and in Scotland the April-June quarter had the maximum for the year.

7. I hardly think that I need comment on this. Plymouth.

FRANK SANDON.

